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ABSTRACT

Skupski, Vickie Lynn. M.S., Wright State University-Miami Valley College of Nursing and Health, Wright State University, 2004. Exploration of - 'Nurses' Use of Non Pharmacological Interventions for Pain Management of Hospitalized Oncology Patients".

Statement of Problem: The issue of pain management and treatment has been addressed for more than 30 years, though professional literature reports continued ineffective management (Joint Commission Satellite Network, 2002). Current literature proposes that effective pain management utilizes both nonpharmacological and pharmacological interventions. Numerous research studies report the effectiveness and use of pharmacological measures in pain management, but a smaller amount of studies on the effectiveness and use of nonpharmacological interventions were found.

Purpose: The purpose of this study was to explore nurses' use of nonpharmacological interventions in pain management for hospitalized oncology patients through the following questions. What types of nonpharmacological interventions, were nurses using in the pain management of hospitalized oncology patients? Was there a difference in the patient's numerical rating scale (NRS) score before and after nonpharmacological interventions? Was there a patient gender difference in the frequency and type of nonpharmacological interventions in hospitalized oncology patients?

Design: A descriptive design using a retrospective chart review was conducted. The major strength of this type of study was that the proposed actions either did or did not occur without bias or influence from either the nurses or researcher.

Sampling: The sample size was 40 oncology patient charts obtained from the medical records department of a local 827-bed tertiary care center located in Southwestern Ohio.

Method: The researcher obtained approval from the facility's Institution Research Board before data collection. The researcher reviewed charts and entered selected data for all pain episodes during the first three days of admission on the researcher developed tool.

Data Analysis: Descriptive and comparative analysis of frequency, percentage, mean, and median, were used to analyze the gathered data. The mean age for both genders was 60.5 (SD=14.03). The majority of patients (72%) rated their pain level upon admission 7 or greater from the 11 point numerical rating scale, and approximately one-third or 38.5% reported pain as 9 or greater. Using the total amount of reported pain episodes, 94.24% of the interventions were pharmacological alone; 0.95% of the interventions were nonpharmacological alone; and 4.76% of the interventions utilized both pharmacological and nonpharmacological interventions. There was no difference in the number of male or female patients receiving nonpharmacological interventions, but there was a difference in the frequency and type of nonpharmacological interventions utilized between genders. Females (n=6) received 18 nonpharmacological interventions for 10 pain episodes while males (n=6) received 9 nonpharmacological interventions for 8 pain episodes.

Discussion: This study has shown that the majority of pain management interventions for the hospitalized oncology patients were pharmacological and that nonpharmacological interventions have either been infrequently utilized or not documented. There were differences in the types and frequency of nonpharmacological interventions between the males and females. Further investigation is needed on the use and effectiveness of nonpharmacological interventions in hospitalized oncology patients.

EXPLORATION OF – “NURSES’ USE OF
NONPHARMACOLOGICAL INTERVENTIONS
FOR PAIN MANAGEMENT OF HOSPITALIZED
ONCOLOGY PATIENTS”

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science

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DEDICATION

I would like to dedicate this work to the one true God, my savior Jesus Christ, the Holy Spirit who sustains me, my husband Michael, my children; Nathan Troy, Amanda Star, Meghan Hope, Jeremy Seth, and to my mother. I thank God for the love, support, patience, and encouragement provided during this project. I love each of you very much.

I. INTRODUCTION

The topic of pain management has been addressed in depth across the healthcare spectrum from providers to regulatory agencies. This focus stems from inadequate management of pain and the prevalence of undertreatment of pain (Carroll, et al., 1999; Hall, 2000; "Longer-lasting Pain Relief", 1998; National Institute of Health [NIH] Technology Assessment Panel, 1996; Summers, 2000; Ward, Donovan, Owen, Groesen, & Serlin, 2000). Statistics show that pain medications were the second most prescribed drug during physician or emergency room visits ("Longer-lasting Pain Relief"). The issue of management and treatment of pain has been addressed for more than 30 years, and the professional literature reports that pain continues to be managed ineffectively (Joint Commission Satellite Network, 2002).

The World Health Organization stated that more than 17% of patients seen by primary care physicians for treatment of pain have continuing pain (Gureje, 1998), while oncology patients suffer from ineffective pain management or treatment by as much as 42% (Oliver, Kravitz, Kaplan, & Meyers, 2001). According to Titler and Rikler (2001) and the NIH Assessment Panel (1996), nonpharmacological interventions added to pharmacological interventions were more effective in the successful management of pain. Results of studies focusing on nonpharmacological interventions for pain management indicated that nonpharmacological interventions were underutilized (Carroll et al., 1999).

Nurses have an important role in the management of pain for hospitalized patients. They assess the patient for intensity, location, and duration of pain and obtain

and administer ordered medications for pharmacological treatment of pain. Nurses are also responsible for assessing the effectiveness of the medication, as well as, for documenting the entire process (Stratton, 1999; Tornkvist, Gardulf, & Streder, 1998).

Nurses are in a unique position to provide or encourage the use of nonpharmacological interventions for pain management to complement pharmacological interventions (Titler & Rakel, 2001; US Public Health, 2002). Nonpharmacological interventions can be categorized as cutaneous focused, cognitive, or behavioral interventions (Titler & Rakel). Cutaneous focused interventions include changing the patient's position, applying a cool cloth to the forehead, applying a heating pad to a muscle, a simple back massage, or reflexology. Cognitive or behavioral interventions implemented by the nurse may include relaxation techniques such as slow, deep breathing exercises; or distractions such as listening to music, biofeedback, reading, or visualization. Implementation of some nonpharmacological methods do not require advanced training to perform, while others such as biofeedback and reflexology require specialized training.

Nurses are in a prime position to utilize basic nonpharmacological intervention skills to assist hospitalized oncology patients with pain management. Many interventions take minimal time to perform such as, simple massage, changing the patient's position, or diverting the person's attention. These basic measures are not charged to the patient's account like medications so these nonpharmacological interventions do not usually increase cost of the hospitalization.

The oncology patient population has been affected to a high degree by acute and chronic pain (Forman, Kitzes, Anderson & Sheehan, 2003). Research indicates that pain

of varying intensities and duration is typically experienced during the process of cancer treatment (Given, et al., 2002). As previously stated, nurses play a key role in the care and management of pain for the hospitalized cancer patient.

This chapter defines the research problem, the significance of this problem and justification for researching this problem. The purpose of this study, specific questions this study attempts to answer, and definitions of terms have been addressed.

Assumptions and limitations of this study, as well as, a summary have been included in this chapter.

Statement of Problem

Current literature reports that effective pain management utilizes both pharmacological and nonpharmacological interventions. In reviewing the literature related to pain management, the author found numerous research studies reporting the use and effectiveness of pharmacological measures for pain management in general. The author found fewer studies on the effectiveness and use of nonpharmacological interventions in general and especially in oncology patients. The decreased availability of research studies related to nonpharmacological interventions used for pain management may indicate that nonpharmacological measures are being underutilized (Arathuzik, 1994; Beck, 1991).

Significance and Justification

Undertreated pain brings a high price not only financially but to the quality of life of oncology patients. The use of nonpharmacological measures in pain management may positively impact the cost of treating pain, change the magnitude of undertreated pain, as

well as, fulfill state initiatives and credentialing organization's expectations for pain management, while improving the quality of life for oncology patients (Strevy, 1998).

Cost. The cost of medication increased every year and is projected to continue rising. Prescription drugs for adults in 1998 cost over \$73,000,000,000 ("Prescription Drugs", n.d.). The rising cost of medications affects insurance companies, patients who pay directly, and every taxpayer since Medicare and Medicaid are federally funded. The direct cost to the average cancer patient is over 50% of the per person cost for outpatient cancer medications, and is approximately \$429 of every \$830 spent ("Prescription Drugs"). The high cost of medication in the hospital setting may be even greater than outpatient therapy, since inpatient use of patient-controlled analgesia (PCA) averaged \$4000 per hospital visit. Cost related to prolonged pain, other than pharmaceutical costs, was estimated at \$100,000,000,000 a year. It is further estimated that in addition to the 100 billion a year spent on prolonged pain management, billions of dollars were lost every year due to employee absenteeism ("Pain in America", n.d.).

Undertreated pain. Definition of the magnitude of the problem goes beyond the cost of pain management. Pain is undertreated according to current research literature (Carroll et al., 1999; Hall, 2000; Longer-lasting Pain Relief, 1998; Summers, 2000), which supports the idea that successful pain control needs to include pharmacological and nonpharmacological interventions (Helmrich, Yates, Nash, Hobman, Poulton, & Berggren, 2001), yet nonpharmacological interventions are underutilized. A study conducted by Carroll et al. (1999) found that only 33% of hospitalized patients had nonpharmacological interventions for pain management documented in the charts. Guidelines from the World Health Organization (WHO) and the Agency for Health Care

Policy and Research (AHCPR) recommended treating pain with nonpharmacological not just pharmacological interventions when possible (AHCPR, 1994).

Regulatory concerns. The impact of undertreatment of pain led to the creation of pain management standards focusing on effective management of pain by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) ("New JCAHO Standards", 2001; Pain in America, n.d.). Standards on pain management developed during a two year collaboration by JCAHO and the University of Wisconsin – Madison Medical School were implemented in 2001 ("New JCAHO Standards", 2001). These standards concentrated on the assessment and management of pain. JCAHO Standard PE.1.4 states that every patient will be assessed for pain and Standard PF.3.4 states that patients will be educated about pain and the management of pain as part of their treatment ("New JCAHO Standards"). Standard TX.3.3 states that policies and procedures will support safe medication ordering and Standard TX.5.4 states that patients will be monitored and assessed for pain after surgery or procedures when pain medication was used ("New JCAHO Standards").

Organizations other than the JCAHO accreditation group are concerned about effective pain management. The American Pain Society (1990), states that doctors, nurses, and various medical departments do not adequately coordinate the patient's pain management plan. In 2000, the American Pain Society issued a position statement about the need for improved pain management in managed care, especially since chronic pain is such a significant health problem. A National Institutes of Health (NIH) panel determined that nonpharmacological interventions utilized in cancer, as well as, other chronic pain conditions assist in effective pain management (NIH Technology

Assessment Panel, 1996). The American Society of Pain Management Nurses (ASPMN) mission statement includes focusing on the promotion and optimal care of those with pain ("ASPMN Mission Statement", 2003). In 1990, New Hampshire formed an initiative to influence change in managing unrelieved pain in oncology patients. New Hampshire was the 27th State to develop a Cancer Pain Initiative and in 1995, 47 other states and 43 countries were already addressing this public health problem (Arnstein, 1995).

Quality of life. The cost of pain management is significant, but quality of life may be considerably more important to the person experiencing pain. Pain is not only physically debilitating, but may be emotionally devastating to the person with prolonged pain ("Pain in America", n.d.). Both negative physical and emotional responses to the effects of pain impact the patient's quality of life. Patients with chronic pain are at high risk for mental health disorders such as depression, anxiety and over use of alcohol ("Longer-lasting Pain Relief", 1998). According to experts in pain management, pain should be classified as a major public health concern ("Pain in America").

Statement of Purpose

The purpose of this study was to explore nurses' utilization of nonpharmacological interventions in the pain management of hospitalized oncology patients.

Research Questions

- 1. What types of nonpharmacological interventions, were nurses using in the pain management of hospitalized oncology patients?**
- 2. Was there a difference in the patient's numerical rating scale (NRS) score before and after nonpharmacological interventions?**

3. Was there a patient gender difference in the frequency and type of nonpharmacological interventions in hospitalized oncology patients?

Definition of Terms

Pain, pain management, and nonpharmacological interventions have been defined for this study. Conceptual and operational definitions of pain, pain management, and nonpharmacological interventions are included.

Pain. The conceptual definition of pain is an unpleasant sensory and emotional multifaceted experience related to actual or potential tissue damage that varies with each individual (IASP, 1986; Melzack & Wall, 1965). In this study, the operational definition of pain is a statement of pain, brief, intermittent, or constant from the patient; request for pain medication from the patient; or the nurses' documented assessment of the patient's pain on the facility's pain assessment form. Complaints of pain will be identified from the chart review when the patient complains of pain, asks for pain medication, or the nurse documents a complaint of pain.

Pain Management. The conceptual definition of pain management is the intervention(s) chosen that may reduce or totally remove the experience of pain. In this study, the operational definition of pain management includes the documentation of activities or actions used to interrupt or change the subjective experience of pain.

Nonpharmacological Interventions. The conceptual definition of nonpharmacological interventions is any method(s) or measure(s) that interrupts or changes the experience of pain and that does not include a medication. In this study, the operational definition of nonpharmacological interventions is any measure(s) used to change or alter the patient's perception of pain without using medications.

Assumptions

For this study the following were assumed:

1. Every person perceives pain individually and subjectively.
2. Patients verbalized their complaints of pain to the nurse.
3. Patient response to pharmacological interventions varies individually.
4. Patient response to nonpharmacological interventions varies individually.
5. Nurses provided pharmacological or nonpharmacological interventions when the patient complained of pain.
6. Registered nurses document all pharmacological and nonpharmacological interventions, and responses.

Limitations

1. Use of a retrospective chart review and not an experimental study provides less overall control.
2. Pain is a very subjective and individual experience, and the patient may not report their perception of pain to the nurse.
3. Incomplete documentation in the patient's charts may exist.
4. The study is not homogenous since the study includes both genders.

Summary

This chapter presented the issue that effective pain management utilizes pharmacological, as well as, nonpharmacological interventions. There are fewer studies available demonstrating the use of nonpharmacological interventions in oncology patients. The significance and justification for effective pain management utilizing nonpharmacological interventions were identified. The purpose of this study and the

research questions were described. The concepts of pain, types of pain, pain management, and nonpharmacological interventions were defined. The assumptions and limitations of the study were addressed. Chapter II presents a review of the literature for this study.

II. REVIEW OF THE LITERATURE

The use of nonpharmacological interventions in pain management has been identified in the previous chapter. This chapter presents a review of the literature on pain management, and types of nonpharmacological interventions used in pain management. The chapter begins with the definitions of pain, physiology of pain, and categorization or types of pain. The educational needs of healthcare providers related to pain management, knowledge of pain management, nurses' knowledge and use of nonpharmacological interventions, gender differences in pain management and types of nonpharmacological interventions are discussed. A theoretical model and conceptual framework are described for this study. The chapter concludes with a brief summary on the importance of nonpharmacological interventions and pain management of oncology patients.

Pain

Webster's New Encyclopedic Dictionary (1993) defines pain in noun form as "physical suffering associated with disease, injury, or other bodily disorder"; "a basic bodily sensation induced by a harmful stimulus, characterized by physical discomfort"; "acute mental or emotional distress"; "care or effort taken in accomplishing something"; "someone or something that annoys or is troublesome (studying can be a real pain)" (p.721). In the verb form pain is defined by Webster New Encyclopedic Dictionary as "to cause pain in or to"; "to give or experience pain" (p. 722). The International Association for the Study of Pain defines pain as a sensory and emotional experience that occurs with actual or potential tissue damage. Pain includes not only the perception of an

unpleasant stimulus but also the response to that perception” (Thomas, 1989, p. 1301).

Other sources describe pain as an unpleasant emotional, sensory and perceptual event due to real or potential tissue damage (Erickson, 2000; Hall, 2000; Summers, 2000). Another major thought is that “pain is subjective and is whatever the experiencing person says it is, existing whenever the experiencing person says it does” (McCaffery, 1972, p. 8; Summers, p. 358). The experience of pain is influenced by external factors such as beliefs; cultural and social customs; and previous experiences (Cole & Brunk, 1999; Hall, 2000). The person’s response to pain may be influenced not only by past experiences and beliefs, but by what their family or societal groups say about pain. Pain has been related to the analogy of a journey that each of us takes alone during our lifetime and that this journey adds to our own knowledge about pain (Cole & Brunk).

The concept of pain is not easy to define due to its subjective nature and the complex factors involved with the experience of pain (Hall, 2000). Unlike temperature readings, there is no single number system to rate or categorize pain. When the body tissues experience damage, a stimulus is sent to the brain, the brain interprets, and the individual responds to the pain stimulus. As individuals, every person has a different perception of and reaction toward pain stimulus. A current method of describing pain is to accept what the person says about his/her pain (Summers, 2000).

Physiology of Pain

Three areas of the nervous system involved in the sensation and perception of pain are the afferent pathways, the central nervous system and the efferent pathways (Huether & Leo, 2002). The afferent pathway begins at the stimulation of the nociceptors and continues to the dorsal horn of the spinal cord. Incoming and descending stimuli

modulate pain patterns in the cells of the dorsal horn. The central nervous system interprets pain signals in different and complex ways using the limbic system, reticular formation, thalamus, hypothalamus, medulla, and cortex. Localization and discrimination of pain is determined by the thalamic nuclei. Warning, alert, and motivational behaviors toward pain probably arrives from the limbic and reticular tracts. The release of corticosteroids, and cardiovascular response when the body undergoes a stress process such as pain is activated by the medulla and hypothalamus. The efferent pathways modify the sensation of pain and are composed of fibers that connect the reticular formation, midbrain, and substantia gelatinosa (Huether & Leo).

Nociceptors or pain receptors are demyelinated nerve endings found in most body tissues and may be stimulated by chemical, thermal, or mechanical means (Huether & Leo, 2002). These receptors transmit impulses into the dorsal root ganglia via large or small afferent nociceptive nerve fibers (Huether & Leo). The large myelinated A-fibers conduct quickly and send stinging or sharp pain. The smaller unmyelinated C-fibers conduct more slowly and transmit dull pain (Huether & Leo). The impulses travel to the spinal cord synapse, cross the cord and ascend by the neospinothalamic or the paleospinothalamic tract (Huether & Leo). The paleospinothalamic tract ascends to and branches into the brain stem reticular formation, pons, and medulla. The neospinothalamic tract ascends with fibers synapsing in the thalamus where pain sensation occurs, and then proceeds into the cortex where precision and discrimination occur. The central nervous system interprets these impulses while the afferent pathway modifies or inhibits the afferent pain signals. The efferent pathway transmits signals

through the spinal cord to the dorsal horn to either block or impair the transmission of the nociceptive impulses (Huether & Leo).

Types of Pain

To assist in identifying pain and having a common base of knowledge, some literature divides pain into two main categories to include acute or chronic pain while other literature uses three main categories. One newer thought process using three categories, divides pain into transient pain, tissue injury pain, and nervous system pain (Puntillo, Miaskowski, & Summer, 2003). Transient pain is brief, and without a negative sequelae, while tissue injury pain may be caused by surgery, trauma, burns, or iatrogenically induced reasons such as radiation therapy used in oncology patients (Puntillo, Miaskowski, & Summer). Nervous system pain involves chronic neuropathic pain or pain caused by dysfunction of or injury to the nervous system (Puntillo, Miaskowski, & Summer). An older description of pain used for years by nurses and noted during the literature review, divides pain into acute pain, chronic non-malignant pain, and chronic malignant pain (Erickson, 2000; Hall, 2000; Herr & Mobily, 1999; Summers, 2000). For the purpose of this study, the three categories of acute pain, chronic non-malignant pain, and chronic malignant pain will be described in the following paragraphs.

Acute pain. This type of pain tends to be short term and usually results from a single event or cause. Surgery or a skeletal fracture is an example of the cause of acute pain. Initially the person experiences pain, though with time and proper healing the pain should subside. If it does not resolve, acute pain transitions to chronic non-malignant pain (Erickson, 2000; Hall, 2000).

Chronic non-malignant pain. This type of pain lasts for a longer period of time than acute pain and is detrimental to the patient though the cause of the pain does not lead to death. Back pain, arthritis, and delayed healing are examples of chronic non-malignant pain which are usually due to a disease process or delayed healing. The person may suffer from depression or anxiety because of the constant demand to respond to the pain (Erickson, 2000; Hall, 2000). The final category of pain, chronic malignant pain, is more detrimental to the person.

Chronic malignant pain. Malignant pain is extremely harmful to the patient and the source or cause of malignant pain may cause death. This type of pain is usually due to cancer or other malignant processes. People state that their daily lives are disrupted due to the pain occurring frequently or constantly which may result in an anxious or depressed patient. Chronic malignant pain can consist of acute, chronic or both types of pain occurring at the same time (Erickson, 2000).

Need for Pain Management Education

Clotfelter (1999) conducted a study of the effects of educating elderly cancer patients ($n = 36$) about nonpharmacological methods of pain management in reducing pain levels. Clotfelter stated that pain management education for healthcare professionals is addressed in multiple articles, but few articles present the concept that elderly patients need to be educated to manage and report their pain. Results from the study showed that there was a statistically significant benefit ($p = 0.02$) of decreased pain for elderly cancer patients educated on nonpharmacological pain control measures as opposed to the control group. Clotfelter states that pain management education is important for health care professionals, but emphasized that the results of the study determined educating the

elderly about pain management using pharmacological and nonpharmacological interventions will aid in the goal of improved pain management.

According to an exploratory study conducted by O'Brien, Dalton, Konsler, and Carlson (1996), effective management of pain was influenced by a nurses' knowledge of pain management and of oncology patients. A sample of 1,400 registered nurses from associate, diploma, baccalaureate or graduate programs were sent a survey developed to explore their knowledge, attitude, and perception of barriers to pain management. Of the 340 returned surveys, 73 % cared for patients with cancer, while 27% did not care for patients with cancer. The total scores for knowledge questions in the group that cared for cancer patients was 18.47 out of 31 (59%) and 15.88 out of 31 (51%) for those who did not care for cancer patients. The weakest knowledge area for both groups of nurses was in the area of opioids with a knowledge score of 4.10 out of 10 for nurses caring for cancer patients and 2.82 for nurses not caring for cancer patients. The nurses reported that they were still not being educated about pain management in their initial educational programs. The nurses who worked with cancer patients stated that they attend continuing education on pain management to compensate for lack of knowledge from their education programs. The researchers concluded that the nurses caring for patients with cancer were setting the example in pain management for the other nurses to follow.

Nurses' education related to pain management nonpharmacological interventions may benefit oncology patient's management of chronic pain as demonstrated through research findings (Clotfelter, 1999; O'Brien, Dalton, Konsler, & Carlson, 1996). Though evidence demonstrates the benefit of nonpharmacological interventions, nurses from the study stated that initial educational programs do not provide sufficient information on

pain management, but that they were able to obtain further information on pain management and nonpharmacological interventions after completing their education programs (O'Brien, Dalton, Konsler & Carlson.). Results of these two studies demonstrate the educational needs of nurses related to interventions for pain, pain management, and the importance of interventions that decrease pain, as stated by both nurses and patients.

Knowledge of Pain Management

Management as a noun according to Webster (1993) is "the act or art of managing"; "skillfulness in managing"; "those who manage an enterprise" (p. 607). The root word manage is a verb and according to Webster (1993) is "to oversee and make decisions about"; "to make and keep compliant"; "to treat with care: use to best advantage"; "to succeed in one's purpose" (p. 607). The experience of pain can be changed or interrupted by pharmacological interventions, nonpharmacological interventions or a combination of both. The decision or decisions on what specific interventions to use is the basis for pain management. Hence, the conceptual definition of pain management is the interventions chosen to reduce the experience of pain and not necessarily relieve all pain. Since pain is unique to each person, multiple interventions may be needed to manage or eliminate pain (Erickson, 2000). According to Herr and Mobily (1999), the most effective method of pain management is the use of both pharmacologic and nonpharmacologic interventions.

Helmrich et al. (2001) studied the beliefs and attitudes of registered nurses on the use of nonpharmacological measures in pain control. The nurses (N = 37) participated in focus group discussions that evaluated the use of nonpharmacological measures in a

hospital setting. Pain is traditionally controlled by pharmacological means even though every person differs in their response not only to pain but to medication. The focus groups determined several benefits of nonpharmacological measures, but clearly stated that the measures are not practiced routinely. The identified barriers to implementation of nonpharmacological measures for pain management included too little time; lack of knowledge; disagreement on the effectiveness of measures; and failure of administrative support. The study suggested that further research on nonpharmacological therapies may increase the focus on these therapies and the use of these therapies in pain control. According to this study, the knowledge of pain management using nonpharmacological measures and the effectiveness of these measures is available and has been presented to nurses. Nurses declare that nonpharmacological interventions are not routinely used in pain management even though they may be an effective adjunct to pain management (Helmrich, et al.).

Pain Experience in Oncology Patients

A qualitative grounded theory design was used to explore the pain experience of elderly hospice patients with cancer (Duggleby, 2000). Participants were over 65 years of age, experienced pain, enrolled in hospice in a rural Texas county, spoke English, and were in advanced stages of cancer. The results of this study found that the basic social problem of pain was identified as suffering, and that enduring was the basic social process used to deal with the suffering of pain. Participants used pain and suffering interchangeably and stated that suffering or pain was physical as well as psychological. They further defined physical pain and suffering as chronic or always there and acute as occurring unexpectedly. Participants described the nonpharmacological strategies of

faith, and caring relationships as helpful for managing or enduring their pain. The results of this study suggest that pharmacological as well as nonpharmacological measures, in addition to, strong faith and caring relationships decreased pain or suffering (Duggleby).

Approximately 75-95% of patients with advanced cancer experience pain (McMillan, 2001). Chronic pain experienced in cancer has been defined as having two different features which include persistent and breakthrough pain. According to McMillan, chronic cancer pain may have peaks in addition to the stable constant pain and that these peaks are breakthrough. One definitive study reports that 43% of patients reported sudden, high intensity pain, while another study reports that up to 64% of cancer patients had this type of pain occurrence (McMillan). The article further explores the need for nurses to properly assess pain in cancer patients and provides suggestions for pain management interventions, including the World Health Organization guidelines on pharmacological pain management (McMillan). The article states that little evidence supports the use of nonpharmacological measures in cancer pain, but that strategies may reduce anxiety, provide distraction and decrease the distress caused by pain (McMillan).

Cancer patients may experience both acute and chronic types of pain as reported in a study conducted by McMillan (2001). Irregardless of the cause or type of pain, the patient desires relief from pain. The patient may be less concerned with the type of intervention as long as the intervention is successful. Because of the subjective experience of pain, many different types of nonpharmacological pain management interventions have been utilized (McMillan).

A descriptive quantitative study was conducted to focus on determining different levels of cancer pain severity by examining the relationship between numerical pain

rating and ratings evaluating pain's interference with functional status (Serlin, Mendoza, Nakamura, Edwards, & Cleeland, 1995). The researchers used subjects aged 18 to 89 from the United States (n=1106), France (n=324), China (n=200), and the Philippines (n=267). The subjects completed the Brief Pain Inventory (BPI) or the non-English equivalent. The BPI asks the patient to rate their pain using a zero to ten numerical rating scale with zero as no pain to ten as the worst pain possible (Serlin, et al.). The subjects also completed a similar numerical rating scale of zero to ten with zero as not interfere to ten as complete interference with functions such as sleep, work, mood, walking, activity, life enjoyment, and relationships (Serlin, et al.). Data were analyzed using four separate multivariate analysis of variances (MANOVA). The researchers determined from the study findings that severity of pain was directly related to functional interference (Serlin, et al.). The researchers also determined that cancer pain patients can be categorized into one of three severity levels with numerical ratings of one to four classified as mild, five to six as moderate, and seven to ten as severe (Serlin, et al.). The researchers believe that the common patterns support their conclusion that pain classification of mild, moderate, and severe, can be analyzed and quantified (Serlin, et al.).

Gender Differences in Pain Management

The author was unable to find any studies on patient gender differences in the use of nonpharmacological interventions in pain management. The author uses the following study to demonstrate that there are gender differences in the medication management of post operative pain. There have been studies conducted to investigate under-medication differences between males and females by age (Celia, 2000). Celia conducted a descriptive study using a retrospective medical records review on gender and age

differences in the pain management for coronary artery bypass surgery patients. The purpose of the study was to determine if there were gender and age differences in the prescribing and administration of pain medication. Participants in the study were equal to or greater than 18 years of age, had no known history of drug addiction, no chronic pain conditions such as arthritis or cancer, and did not use patient controlled analgesia. Of the 382 post coronary artery bypass surgery patient records meeting the study criteria, there were more men ($n = 279$) than women ($n = 103$). To evaluate age difference the patients were divided into three groups; 60 years or less ($n = 122$), 61 years to 69 years ($n = 133$), and 70 or more years ($n = 122$). Equianalgesic dosing was used to calculate and compare the narcotic analgesics to morphine sulfate. Frequencies were used to analyze narcotic analgesic prescription orders and t tests were used to compare mean pain medication administration differences between men and women. Analysis of variance (ANOVA) was used to examine age differences. The findings demonstrated that there was no significant difference in the prescription of narcotics; men received significantly ($p > .0003$) more pain medication than females; and that those less than 60 years of age received significantly more pain medication ($p < .05$) than older adults. According to Celia, the findings are comparable to other studies exploring under medication of pain.

Nonpharmacological Interventions

Relaxation. A pilot study conducted with cognitively intact breast cancer patients focused on the effects of relaxation, visualization, and cognitive coping skills on their level of pain intensity, as well as, other negative emotions such as anxiety, depression, and hostility (Arathuzik, 1994). The study consisted of one control group; one group informed about relaxation and visualization techniques; and a final group trained with

relaxation, visualization and cognitive coping skills interventions. There was no significant difference between the three groups on perceived pain intensity or distress, though there was a trend toward decreased pain intensity in the treatment groups. There was a significant difference ($F = 6.7797$, $p = .0054$) on perceived control and ability to decrease pain between all groups. Patients in the two treatment groups reported benefits to all of the interventions, but preferred relaxation to visualization or coping skills interventions. During analysis, there was no statistically significant difference in the scores for decreased pain, the treatment group's scores for decreased pain was slightly higher than for the control group. The higher scores for decreased pain may indicate the potential benefits for the specific pain management interventions utilized with the treatment group. Arathuzik demonstrated that brief interventions such as relaxation or visualization may be beneficial and easily implemented by busy nurses. Patients taught relaxation or visualization interventions can actively contribute to their pain management. The researcher recommends further studies be conducted on nonpharmacological interventions used in cancer pain management (Arathuzik).

Music distraction. An experimental crossover study was conducted to evaluate the therapeutic use of music in decreasing pain for cancer patients receiving scheduled analgesics. The study model focused on the endogenous system of modifying and decreasing pain perception. The cognitive effect of music may stimulate endorphin production and the endogenous mechanisms to modify pain sensation, as well as, change the perception of pain (Beck, 1991). Subjects ($N = 15$) were not cognitively impaired, read and spoke English, and were over 18 years old. To decrease study interference, patients were not allowed to take pain medication randomly, but were allowed scheduled

pain medications. Each participant had a three day baseline phase, a three day music therapy phase, a three day control sound phase, and a three day follow-up phase. The subjects kept diaries, were interviewed by the reviewer, and answered the Abbreviated Version of the McGill Pain Questionnaire (MPQ), the Present Pain Intensity (PPI) Scale, and an absolute Pain Visual Analogue Scale (VAS).

In response patterns, nearly three-fourths of the subjects had some decrease in pain during the music phase of the study and nearly one-half of these subjects stated that the decrease was moderate or great. The majority of subjects ($n = 8$, 53.3%) did not respond to the control sound and one-fifth of the subjects said that there was a moderate or great decrease in pain during this phase. Limitations of the study were small sample size, cancer variety, and varied sites of pain. The majority (93.3%) of pain was located internally in the bone, spine, and at the cancer site.

A more recent music distraction study was conducted in an emergency room with musculoskeletal trauma patients in acute pain (Tanabe, Thomas, Paice, Spiller, & Marcantonio, 2001). The 77 participants were systematically assigned to one of three groups receiving either standard care consisting of ice, elevation, and immobilization; standard care and ibuprofen; or standard care and music distraction. Inclusion criteria was trauma within the past 24 hours and pain rating of four or greater on a scale of one to ten with ten being greatest pain and one being the least pain. Patients were monitored 30 and 60 minutes after the intervention. Findings indicated there was a statistically significant reduction in pain among all groups at 30 minutes ($F = 16.18$, $p < .01$). Conversely at 60 minutes, 70% of the patients reported a rating of four or greater for pain intensity. According to the researchers, pain reduction was not clinically significant, but

patients stated high satisfaction with the care provided. Researchers concluded that the music distraction might not have reduced pain perception, but increased patient care satisfaction. Limitations were lack of randomization, no true control group without standard care, and the physicians may have altered their prescribing patterns.

Foot reflexology. A quasi-experimental, crossover study was implemented to examine the effects of foot reflexology on chronic pain and anxiety in lung and breast cancer patients (Stephenson, Weinrich, & Abbas, 2000). There are several theories on the effects of reflexology to include energy theory, lactic acid theory, and proprioceptive nervous receptors. Energy theory proposes organs communicate in electromagnetic fields and that reflexology releases energy to circulate in the body and unblock those pathways (Stephenson, Weinrich, & Abbas). Lactic acid theory proposes that lactic acid is released during reflexology allowing free flow of energy. Proprioceptive theory states a relationship exists between organs and feet, and that foot reflexology affect the organs. The study included 23 subjects with breast ($n = 13$) or lung cancer ($n = 10$) in stages I, II, or III. Results showed that the breast cancer patients reported decreased pain according to descriptive words on the SF-MPQ, but the other two pain measurements (PPI, VAS) did not show a significant decrease in pain. Results could not be calculated for the lung cancer patients because only two subjects complained of pain during the study. Both groups demonstrated a decrease in anxiety with the greater decrease in lung cancer patients. The researchers concluded that reflexology can decrease anxiety and pain in cancer patients and that further studies are needed (Stephenson, Weinrich, & Abbas).

Massage. A quasi-experimental study was conducted on an oncology unit in a large urban Veterans Administration medical center (Smith, Kemp, Hemphill, & Vojir,

2002). Forty one patients admitted for radiation or chemotherapy participated in the study. The majority of subjects were retired or not working (95%), Caucasian, and male. Twenty one participants received the control therapy of nurse interaction while the other twenty received therapeutic massage. Pain intensity was measured with a Numerical Rating Scale and a Likert-type scale was used to measure pain distress. The findings showed a significant decrease of pain in the group receiving massage. Anxiety was decreased in both groups, which may indicate that general human contact may reduce anxiety. The findings support use of massage in hospitalized oncology patients. Limitations of the study were small sample size, greater male population, and lack of random assignment. Hawthorne effect was avoided by studying the groups separately with the massage group studied first during eight months, and then the nurse interaction group studied during the next eight months. Since subjects were mainly male, further research is needed to compare the effects of massage on women, ethnic groups, and those employed as opposed to this group of unemployed subjects (Smith, et al.).

Of the many different types of nonpharmacological interventions, studies using music distraction, relaxation, foot reflexology, and massage were included in the review of the literature. These types of interventions may interfere with pain perception, through a focus on specific physical activities, as well as, cognitive activities. Limitations to the studies reviewed; included small sample size, too many variables, lack of cultural or gender diversity, and lack of true control groups. As reported in the studies, the researchers attempted to control variables, but ethically can not deny standards of care such as pain medication. Improvement in pain management was reported in several of the studies.

Nurses' Knowledge of Nonpharmacological Interventions

A pilot study evaluated the effect of a structured intervention to improve pain management in a 316 bed Midwestern community hospital (Barnason, Merboth, Pozehl, & Tietjen, 1998). The researchers stated that nurses need to incorporate current pain management in clinical practice to improve patient outcomes. A convenience sample of 135 nurses (about 25% of the nursing staff), completed a researcher developed cognitive needs assessment tool. The mean level of achievement on the assessment tool was 54%, which indicated a lack of clinical pain management knowledge and technique among the participants. After the needs assessment was completed, the researchers designed a structured intervention which focused on pain management principles, pharmacology, and clinical nursing standards for pain management. Evaluation of the intervention was conducted eight months later. Findings from the evaluation reported greater patient satisfaction with his/her pain management, and an increase in nurses' knowledge level on pain management. Clinical pain management practices were improved after the implementation of the pilot study. The study demonstrated a need for healthcare facilities to develop pain management improvement programs. Limitations to the study included use of convenience sampling as opposed to matched samples, and structured evaluation conducted before the intervention implementation. The pilot study did demonstrate that nurses' cognitive knowledge is a possible focus area for pain management improvement (Barnason, et al.).

Nurses' Utilization of Nonpharmacological Interventions

A study by Cole and Brunk (1999) was conducted to discover nurses' use of relaxation techniques to alleviate acute pain. Cole and Brunk reviewed twenty one

articles and two books written from 1987 to 1997 that focused on relaxation techniques for acute pain management. Though relaxation techniques for pain control have been used in the Eastern world for centuries, the use did not spread into the Western world until 1938 (Cole and Brunk). Cole and Brunk reported that only a few nursing studies have examined relaxation techniques in the past ten years. Their review of literature showed that relaxation techniques were seldom studied even though these techniques have demonstrated effectiveness and are low cost. Cole and Brunk concluded that relaxation techniques are “an untapped well of potential that will benefit nursing and our patients” (p. 392).

During the literature search, many studies were available that focus on the effects of pharmacological interventions utilized in pain management for oncology patients. The studies focusing on the effects of nonpharmacological interventions identify benefits in patient satisfaction with his/her pain management.

Theoretical Framework

Gate control theory was developed in 1965 by psychologist Ronald Melzack and anatomist Patrick Wall (Jones, 1992; Melzack & Wall, 1965). The theory proposed why some pain messages are blocked, while other messages are received by the brain through a gate system. The premise is that a gate system controls the exchange of information to and from the brain. It is believed that nonpharmacological interventions modulate pain by inhibiting or confusing nociceptive signals. The gate system demonstrates control of messages through physical and psychological factors. Thoughts, beliefs and emotions in addition to physical sensation are used by the brain to interpret painful stimulation. Small and large nerve fibers carry information into the substantia gelatinosa and

transmission cells of the spinal cord. The substantia gelatinosa has an inhibitory transmission effect when receiving large fiber activity and an excitation or increase transmission effect when receiving small fiber activity. The information is sent from the spinal cord to the brain. The brain processes the information using the individual's current mood, past experience, and current attention span. The brain determines if the received information should be registered and acknowledged; and then sends a signal that either closes or opens the transmission gate. As the gate opens wider, pain perception increases and as the gate closes, pain perception decreases. If the gate is closed the person will not experience pain (Melzack & Wall, 1965). Figure 1 displays the Gate Control Theory with an open gating mechanism.

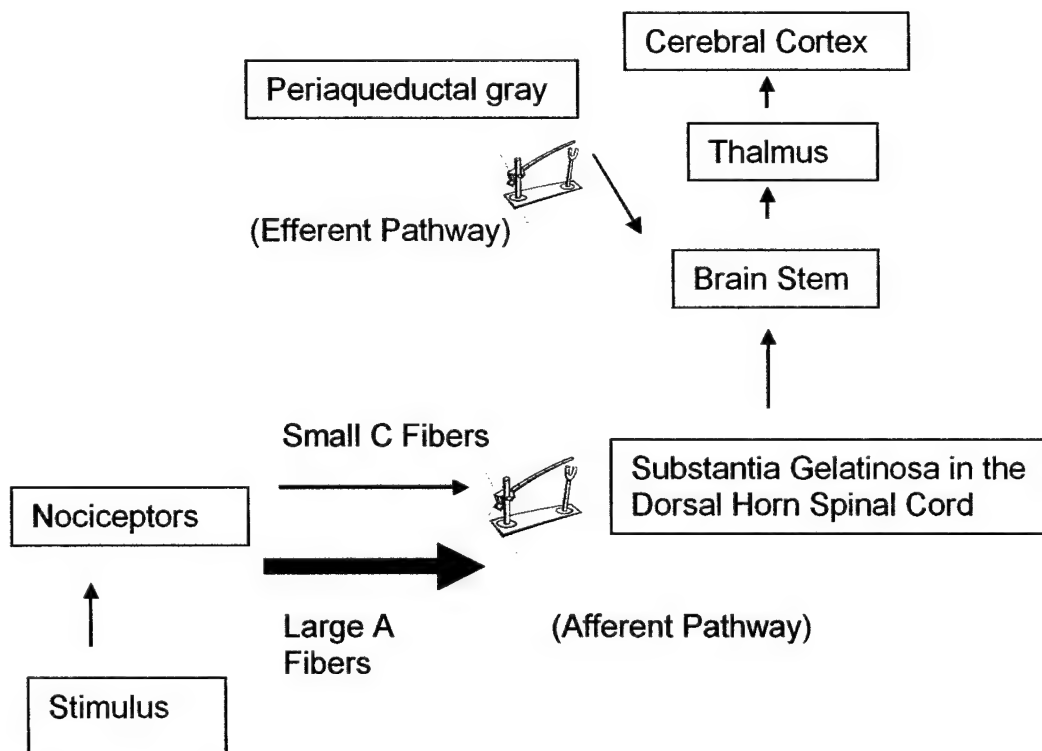


Figure 1. The Gate Control Theory

Conceptual Framework

The Gate Control Theory supports the relationship of pain management and nonpharmacological measures (Jones, 1992; Melzack & Wall, 1988). The theory was developed to explain how pain is controlled and communicated and it proposes why nonpharmacological or pharmacological interventions are effective in management by closing gates. Pain response, according to the Gate Control Theory, is influenced by physical and psychological factors; nonpharmacological measures can be physical or psychological factors. Nonpharmacological interventions can act on the central nervous system or afferent pathway to modify the perception of pain. Pain management does not have to be the absence of pain, but the control or decrease of pain which is possible according to the Gate Control Theory.

An oncology patient will experience significant pain when the gates are open because the pain stimulus from the nociceptors is sent, processed, and returned without modification from the afferent pathway or central nervous system. When gates are open in different degrees as influenced by the afferent pathway or central nervous system, the oncology patient will experience different perceptions of pain. The term “breakthrough” pain may be used to define the concept of unmodified pain stimulus passing through gates, even when an intervention has been used. The definitions and relationships for the concepts of nonpharmacological measures and pain management are very compatible with the Gate Control Theory. Measures or interventions based on the Gate Control Theory can be present though the theory does not imply that measures have to be used or are underused. The Gate Control Theory demonstrates that the nonpharmacological interventions are able to change the person’s response to pain by blocking or decreasing

the perception of painful stimulus. Figure 2 presents a model of the Gate Control Theory as related to nonpharmacological interventions.

Various interventions such as massage and music distraction are transmitted via the afferent nerve fibers to the central control or brain. The brain decides that the message from the action of the massage or music distraction is more important than the pain message sent from the small nerve fibers and transmission cells. Unacknowledged pain messages to the brain will close the gate and remove the perception of pain. When the gate is not fully closed and painful stimulus has been sent, the person will experience pain which varies from person to person.

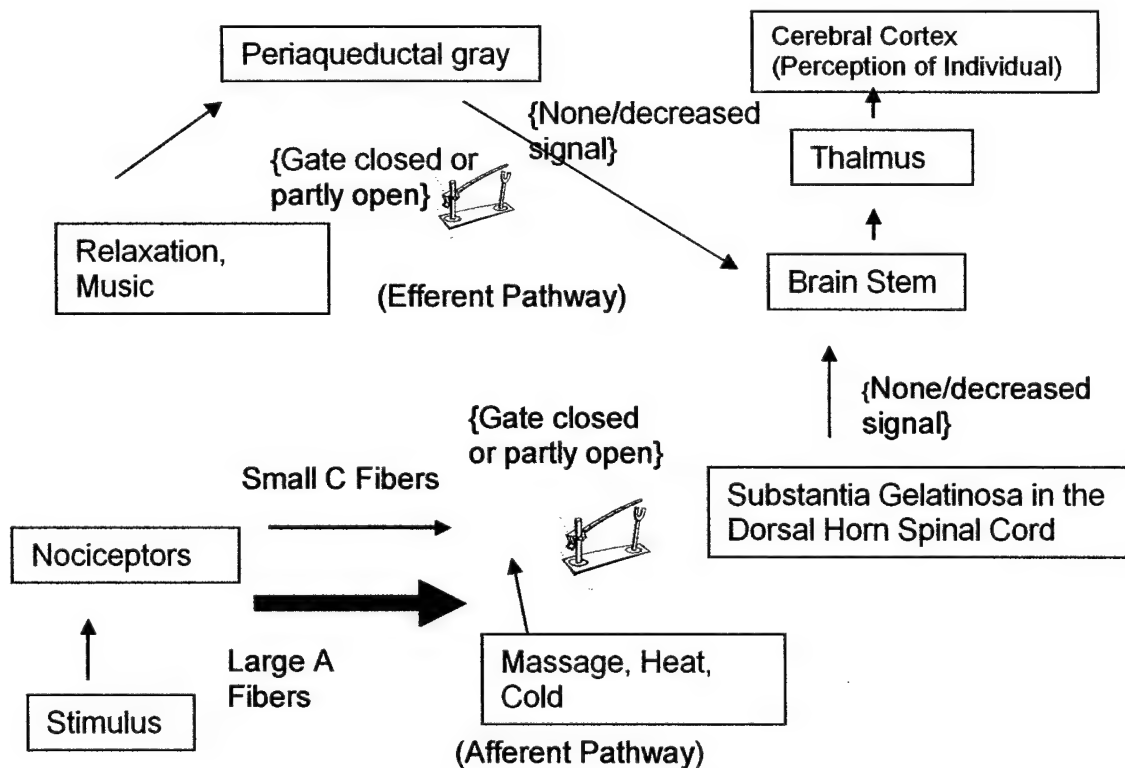


Figure 2. Conceptual Framework: Nonpharmacological interventions and the brain's response.

Summary

Several studies have demonstrated that nonpharmacological interventions such as relaxation, music distraction, foot reflexology and massage are able to reduce or alter chronic pain perception. Nonpharmacological interventions and pain management education is available and may be taught in nursing schools, yet research does not demonstrate a large utilization of nonpharmacological interventions in hospitalized patients who are experiencing chronic pain. The purpose of this study is to explore nurses' utilization of nonpharmacological interventions for pain management of hospitalized oncology patients. Further research on the utilization of nonpharmacological interventions for hospitalized oncology patients by nurses may demonstrate a gap between available knowledge on nonpharmacological pain interventions and pain management and clinical practice.

III. METHODS

As previously stated, the purpose of this study was to explore nurses' utilization of nonpharmacological interventions in pain management of hospitalized oncology patients. Current literature had demonstrated that pain is undertreated or managed ineffectively and research supports the use of nonpharmacological interventions in pain management as having a positive effect in decreasing the experience of pain or decreasing the perception of pain. This chapter defines the research design, describes the setting, population, and sampling plan of the study. Ethical considerations were addressed; and the instrument, procedure, and data analysis plan was discussed.

Research Design

A descriptive design using a retrospective chart review was conducted to explore the utilization of nonpharmacological interventions in pain management by nurses working with oncology patients. The purpose of this design was to assess if nonpharmacological interventions have or have not been used. The major strength of this type of study was that the proposed intervention either did or did not occur without bias or influence from either the nurses or researcher. A second strength was that participants may not experience rivalry, different treatments, or demoralization since they were not actively involved in the study. Limitations included the number of available charts that met the inclusion criteria and missing or incomplete documentation in the charts.

Setting

The chart reviews were obtained from a local 827-bed tertiary care center located in Southwestern Ohio. This setting provides care for oncology patients and is accredited by the Joint Commission for Accreditation of Healthcare Organization. The facility has three inpatient units specializing in care of oncology patients for a total of 53 beds with an average daily census of 46 patients. The top three cancer diagnoses included colon, lung, and, breast cancer and the average length of stay for the oncology patient was four to five days. The facility uses a Pain Assessment Comfort Management Flow Sheet to document pain assessment, interventions, comfort measures, and response.

Data were collected from the charts of discharged oncology patients. Prior to collecting the data, permission was obtained by the institution's research board and the Wright State University research board.

Population

The target population for this study consisted of adult patients greater than 18 years of age with any type of cancer who had pain management as an issue during the hospitalization stay that was reviewed. Classification of tumors, especially malignant tumors, is generally categorized by grading which defines the degree of differentiation (Bullock, 1992). Grades I, II and III have changes in the differentiation of the tissues, though the tissue of origin is represented to some degree, though Grade IV has major differentiation and does not resemble the tissue of origin (Bullock). Oncology patients in the sample were in grade I, II, III, or IV. The oncology patient was admitted for any medical diagnoses and upon admission had a pain rating score of five or greater on a numeric scale of zero to ten with zero representing pain free and ten the worst pain.

Sampling Plan

Charts were reviewed for inclusion and exclusion criteria beginning with August 2003 charts and moving backwards toward February 2003. The first 20 charts for males and 20 charts for females to meet the selection criteria were included in the study. Irregardless of the length of stay, pain management data were collected from the first three days of the admission. During the first three days after admission, all entries related to complaint of pain, pain management, and response to pain management treatment from the chart progress notes, and the facilities' Pain Assessment Comfort Management Flow Sheet was recorded.

Many of the inclusion and exclusion criteria focused on patients who were not cognitively impaired, and able to verbalize their perception of pain. Patients (a) who were oriented to person, place, and time during admission as documented on the daily nursing assessment for orientation; (b) those with the ability to comprehend and verbalize English; (c) those greater than 18 years of age with any type of cancer in Stage I, II, III, or IV that were not cognitively impaired; (d) upon admission had a pain rating score of five or greater on a numeric scale of zero to ten; (e) those admitted for at least three days; and (f) those admitted for any medical diagnoses were included in this study. Exclusion criteria deleted patients (a) who were cognitively impaired from pre-existing diseases such as Alzheimer's disease, or excessive sedation; (b) those unable to comprehend or verbalize English; (c) those admitted for any surgical diagnoses; (d) those with a surgical procedure performed during the first three days of the admission; (e) those who died during the first three days of admission; and (f) those not admitted for at least three days. The sample size was 20 male and 20 female charts for a total of 40 patient charts.

Ethical Considerations

The study ensured right to privacy by maintaining confidentiality of all information. The researcher did not gather any information with identifiable indicators such as names, addresses, or phone numbers. All subjects had the right to fair treatment since charts were not included based on race, gender, religious, socioeconomic status, or age excluding those under 18 years of age. The researcher maintained beneficence for all subjects by doing good and not harm with the collected data. Protection from discomfort or harm and self-determination is likely because patients did not actively take part in the study. The approval of the Institutional Review Board (IRB) from the medical facility and Wright State University was obtained prior to gathering data (Appendix A).

Instrument

The instrument for this study included demographic information, assessment of pain, pain management interventions utilized, and evaluation of the interventions. The demographic data included gender, age, race, length of stay (LOS); do not resuscitate (DNR) status, pain rating scale on admission, cancer type, and cancer stage. The course of the painful episode included assessment and intervention data to include the time, pain score, location, characteristics, pain frequency, medication dose and route if given, sedation score, type of relief measure used, and the evaluation after the relief measure included the time, pain score, sedation score and plan. The facility uses a numerical rating scale (NRS) with 0 representing no pain, 1 representing mild pain, 5 representing moderate pain, to 10 representing severe pain. Intervention data included specific information about the type of intervention(s) whether pharmacological or nonpharmacological utilized for the complaint of pain. The evaluation data included post intervention assessment.

The instrument was developed by the researcher for this study and has been titled the Chart Review Form (Appendix B). The instrument's validity was evaluated by peer experts for content. To ensure consistency of data, the researcher was the only person to collect data. Intra-rater reliability was conducted by the researcher during the data gathering. The researcher reviewed the first chart from a group of eight for a second time after collecting data from all eight charts. The first and second reviews were compared for reliability and consistency. The results of the second reviews were identical to the first reviews of each eighth chart.

Procedure

The researcher obtained permission from the thesis committee to pursue the project and received guidance related to the study. Next, the researcher obtained approval from the Institutional Review Board (IRB) of the medical facility and Wright State University (Appendix A). Data were gathered during a four week period. The medical record department collected discharged oncology patient charts for the review of the researcher who selected records that met the inclusion criteria of the study. The researcher looked at records starting with August 2003 and reviewed back toward February 2003. The researcher obtained the potential subject's charts from the medical record department and reviewed the charts in the medical record room. Each chart was reviewed for inclusion and exclusion criteria and the charts meeting inclusion criteria and not containing exclusion criteria were used in the study. Available data were collected from the charts and entered on the researcher developed instrument titled Chart Review Form. After every eight charts reviewed, the researcher took the first chart from the group of eight and reviewed it a second time. The first and second reviews were

compared for intra-rater reliability. All entries concerning pain management for the first three days of admission were collected on the Chart Review Form. At the completion of data collection, the data were entered into a database, and presented to the statistical department for analysis. The statistical findings were analyzed for significance and relationship, and are presented in the next chapter of this report.

Data Analysis Plan

Descriptive and comparative analysis of data was used to evaluate the findings in this study. The following is a list of research questions, how each question was measured, the level of measurement, and the statistic used to analyze each question.

1. What types of nonpharmacological interventions were nurses using in the pain management of hospitalized oncology patients? Nonpharmacological and pharmacological measures are considered nominal level data, and were documented on the researcher developed instrument. The data were analyzed by using descriptive statistical analysis of frequency, percentage, mean, and median. A table displaying the types of nonpharmacological interventions and the occurrence of these interventions was included in Chapter IV.

2. Was there a difference in the patient's numerical rating scale (NRS) score before and after nonpharmacological interventions? The pain level scores are considered ordinal variables which were documented on the researcher developed instrument. The data were to be analyzed by using paired comparison t-test. The analysis was not possible due to missing documentation.

3. Was there a patient gender difference in the frequency and type of nonpharmacological interventions in hospitalized oncology patients? Gender and

type of nonpharmacological intervention are nominal data; while frequency of nonpharmacological interventions is continuous. The gender, frequency of occurrence, and type of nonpharmacological interventions was documented on the researcher developed instrument. The data were analyzed by using descriptive statistical analysis of frequency, percentage, mean, and median.

Summary

This descriptive study may expand nursing knowledge about the frequency of occurrence in the use of nonpharmacological interventions for the pain management of oncology patients. This study may show the need for nurses to implement or increase the use of nonpharmacological methods in pain management, as well as, the need for further research in this area. Research may show that nurses frequently use nonpharmacological interventions and that further research may need to focus on the effects of these interventions. The research designs, methods of the study, description of the procedure, and plan for the analysis of the data were discussed in this chapter.

IV. ANALYSIS OF DATA

In this descriptive study, a retrospective chart review was used to gather data from 40 oncology patient records. The purpose of this study was to explore nurses' utilization of nonpharmacological interventions in the pain management of hospitalized oncology patients. Currently, there have been few articles on the use of nonpharmacological interventions in the pain management of hospitalized oncology patients. Further research was needed to explore the use of nonpharmacological interventions. The purpose of this chapter is to present the analysis of data. This chapter includes a brief overview of the researcher developed collection tool, description of the sample, analysis of data by research question, and a summary.

Instrument

The researcher developed the instrument for this study titled Chart Review Form (Appendix C), included demographic information, assessment of pain, pain management interventions utilized, and evaluation of the interventions. The demographic data included gender, age, race, length of stay (LOS); do not resuscitate (DNR) status, pain rating scale on admission, cancer type, and cancer stage. For this study, the researcher analyzed gender, age, race, pain rating on admission, and cancer type. The length of stay, do not resuscitate status and cancer stage were not analyzed for this study because data were missing for the resuscitate status and cancer stage. The researcher noted the length of stay for possible use in a future evaluation of the data, but for this study only the first three days of the hospitalization was documented, so length of stay was not analyzed.

The course of the painful episode included assessment and intervention data to include the time, pain score, location, characteristics, pain frequency, medication dose and route if given, sedation score, type of relief measure used, and the evaluation after the relief measure included the time, pain score, sedation score and plan. The assessment and intervention data were mainly present for every episode, though the researcher could not find documentation for much of the evaluation of interventions.

Description of Sample

Data were collected over a 30 day period, August 16, 2003 to September 15, 2003. During this time, the researcher reviewed oncology patient charts collected by the medical records personnel for inclusion and exclusion criteria. The first twenty male and twenty female charts meeting the inclusion criteria and not violating the exclusion criteria were used in the study. Study sample consisted of 40 ($N=40$) oncology patient records.

The demographic data were interpreted using descriptive statistics. Range, mean, median, and standard deviation were calculated to summarize the continuous variable of age. Frequencies and percentages were calculated to summarize the categorical variable of gender. Analysis showed that half of the records were from female patients, and half of the records were from male patients. The researcher missed the age of one female patient so analysis of age for the females only includes 19 of the 20 females. The age range for the 20 male patients was 30 to 83, the mean age was 60.2, and the median age was 64; while the age range for the 19 female patients was 39 to 89, the mean age was 60.8 and the median age was 59. The mean age for both genders was 60.5 and the median age for both genders was 61.5 ($SD = 14.035$).

Frequencies and percentages were calculated to summarize the categorical variable of race. The majority of the study group or 34 were Caucasian (86%) with six African Americans (15%). There was one African American male (5%) and five African American female patients (25%) respectively.

Frequencies and percentages were calculated to determine the type of cancer. The majority or 62.5% of the cancer was listed under the category titled other which included lymphoma, melanoma, cervical, throat, and a variety of different types of cancers. The remaining 37.5 % of cancer includes: (a) lung cancer at 22.5%, (b) breast cancer at 7.5%, (c) colon cancer at 5.0%, and (d) prostate cancer at 2.5%.

Frequencies and percentages were calculated to determine the continuous variable of the pain rating upon admission. Upon admission, the majority of patients (72.5%) rated their pain level 7 or greater from the 11 point numerical rating scale used by the facility. The mean admission pain rating was 7.88 and the standard deviation was 1.911. Approximately one-third or 38.5% of the patients rated their pain 9 or greater. One patient reported a pain rating of 12 from the 11 point numerical rating scale which has 10 as the highest score (Table 1).

Table 1.

Percent and Cumulative Percent of Subjects and Their Pain Rating Scale Upon Admission

Pain Rating Score	Number of Patients *	Percent	Cumulative Percent
5	6	15.0	15.0
6	5	12.5	27.5
7	6	15.0	42.5
8	8	20.0	62.5
9	3	7.5	70.0
10	11	27.5	97.5
12	1	2.5	100.0
<i>Totals</i>	40	100.0	

* n = both genders

Analysis of Data by Research Question

Question 1. What types of nonpharmacological interventions, were nurses using in the pain management of hospitalized oncology patients? Frequencies and percentages were calculated to determine the type of intervention used for each episode of pain. The sample of 40 patients had a total of 315 pain episodes with 18 pain episodes treated with nonpharmacological interventions. Three of the pain episodes were managed with nonpharmacological interventions alone, while 297 of the pain episodes were managed with pharmacological interventions alone. Pharmacological interventions were used with nonpharmacological interventions in 15 of the pain episodes. Using the total amount of pain episodes, 94.24% of the interventions pharmacological alone; 0.95% of the interventions were nonpharmacological alone; and 4.76% of the interventions utilized both pharmacological and nonpharmacological interventions (Figure 3).

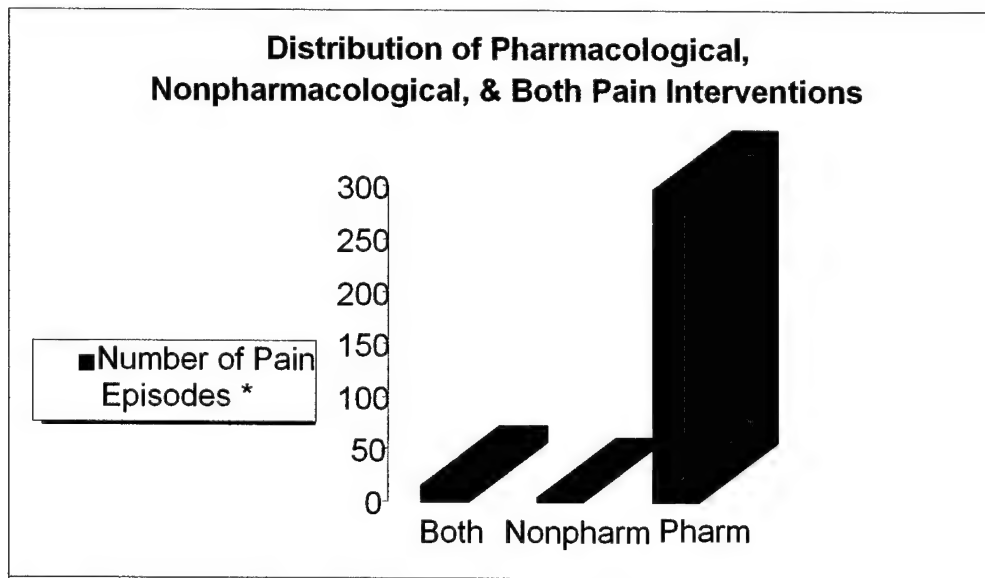


Figure 3. Distribution of Pharmacological, Nonpharmacological, & Both Pain Interventions (* N = 315; Both n = 15; Nonpharm n = 3; Pharm n = 297)

Types of nonpharmacological interventions utilized in the 18 pain episodes, in order of frequency include: re-positioning (n =10), diversion (n = 7), heat (n =4), activity (n = 3), encouragement (n = 2), and cold (n = 1). During pain episode management, two or more nonpharmacological interventions were utilized in six of the pain episodes, while the other 12 pain episodes utilized only one nonpharmacological intervention. (Figure 4)

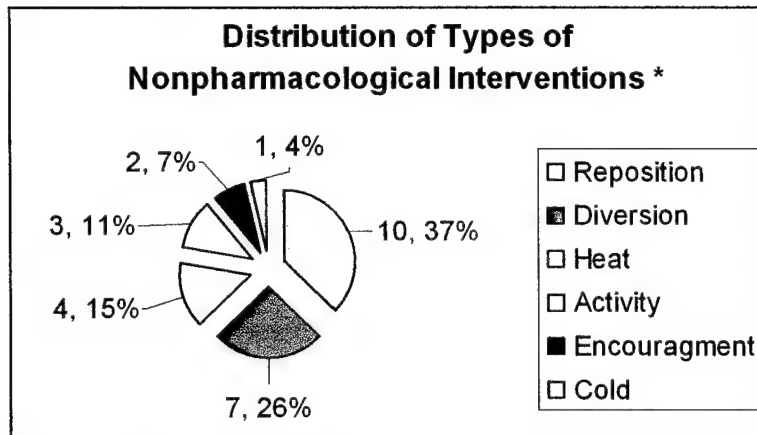


Figure 4. Distribution of Type of Nonpharmacological Interventions
* n = 27

Question 2. Was there a difference in the patient's numerical pain rating scale

(NRS) score before and after nonpharmacological interventions? The researcher was unable to evaluate this question due to a lack of data. Not every episode with nonpharmacological interventions had a follow up evaluation documented on the flow sheet or in the nursing notes. Out of the 18 pain episodes utilizing nonpharmacological interventions, 12 had follow up evaluations, but these were incomplete. Of the 18 pain episodes managed with nonpharmacological interventions, 15 (83.3%) were combined with pharmacological interventions, which might have been a confounding variable in analysis of pain management evaluation data.

Question 3. Was there a patient gender difference in the frequency and type of nonpharmacological interventions in hospitalized oncology patients? Frequencies and percentages were calculated to determine the frequency and type of nonpharmacological interventions received by gender. From the 40 charts surveyed, 12 patients, six males and six females, received nonpharmacological interventions alone or with pharmacological interventions. According to the documentation, the remaining 28 patients received only pharmacological interventions.

There was a difference between genders on the percentage of nonpharmacological interventions utilized. The six males reported 57 episodes of pain which were managed with nonpharmacological interventions alone (3%), pharmacological alone (85%), and pharmacological combined with nonpharmacological (10%). The six females reported 83 episodes of pain which were managed with nonpharmacological interventions alone (1%), pharmacological alone (88%), and pharmacological interventions combined with nonpharmacological (11%). (Figure 5).

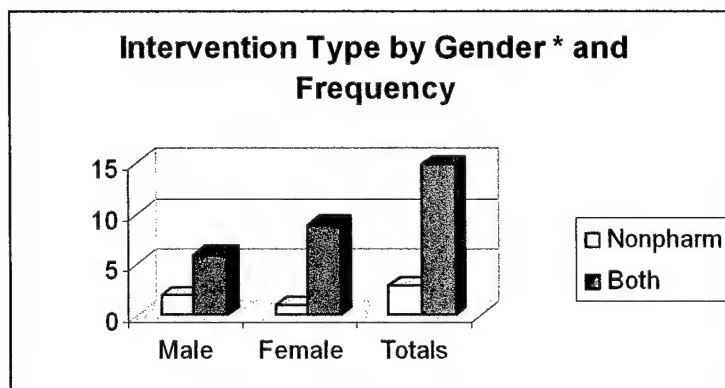


Figure 5. Intervention Type by Gender and Frequency

* n = 12

There was a difference in the frequency and type of nonpharmacological interventions utilized between genders. Of the six females and six males, females received twice as many nonpharmacological interventions as the males. Females received 18 nonpharmacological interventions for 10 pain episodes while males received nine nonpharmacological interventions for eight pain episodes. Interventions for males were position, heat, diversion, and encouragement for a total of four different types of interventions. Females had the same nonpharmacological interventions utilized, as well as, activity and cold for a total of six different types of interventions. In females, the largest percentage (33.3%) of nonpharmacological interventions was repositioning with diversion second (27.7%). The percentage of reposition intervention usage compared to the other interventions in the males was 44.4% and diversion was 22.2% (Table 2).

Table 2.

Frequency of Specific Type of Nonpharmacological Intervention by Episode and Gender *

	Reposition	Diversion	Activity	Heat	Encourage	Cold	Total
Male	4	2	0	2	1	0	9
Female	6	5	3	2	1	1	18
<i>Totals</i>	10	7	3	4	2	1	27

* n = 12

In the patients (n=12) receiving nonpharmacological interventions, the frequency of pain episodes varied by gender with males having 57 pain episodes and females having 83 pain episodes. Based on frequency, the percentage of pharmacological intervention alone in females was 87.95%, and 85.96% in males. Based on frequency, the percentage of nonpharmacological interventions alone in females was 1.2%, while the percentage of nonpharmacological interventions alone in males was 3.5%. Based on frequency, the percentage of both types of interventions in females was 10.8%, while the percentage of both types of interventions in males was 10.5% (Table 3).

Table 3.

Frequency of Interventions *

	Pharm	Nonpharm only	Pharm/nonpharm	Total episodes
Male (n = 6)	49	2	6	57
Female (n = 6)	73	1	9	83
<i>Totals</i>	122	3	15	140

* only patients receiving nonpharm interventions included in this table

Summary

Chapter IV presented the results from the data collected by the researcher utilizing the Chart Review Form. Descriptive statistics were used to determine the types, and frequencies of interventions used for pain management in hospitalized oncology patients. The majority of interventions (94.24%) were pharmacological interventions alone and a smaller amount (4.76%) of the interventions included pharmacological and nonpharmacological interventions. The smallest frequency of interventions (0.95%) utilized nonpharmacological interventions alone.

Due to missing data, the researcher could not analyze for difference in pain rating scores between nonpharmacological and pharmacological interventions. In addition, since the majority of episodes (99.05%) included pharmacological interventions, the size of this study's results may not have provided an adequate analysis to evaluate the effect of nonpharmacological interventions alone on the patient's numerical pain rating scale.

The frequency and types of nonpharmacological interventions utilized varied by gender. Females received twice the amount of nonpharmacological interventions (18) than nonpharmacological interventions (9) by males. Females received six different types of nonpharmacological interventions while males received four different types of nonpharmacological interventions.

This chapter presented the analysis of data to include a brief overview of the researcher developed collection tool, description of the sample, and analysis of data by research question. The next chapter will discuss the analysis of the data.

V. DISCUSSION

Pain control failure has been linked to not educating the consumer, in addition to not educating the medical provider (Barnason, Merboth, Pozehl, & Tietjen, 1998; Clotfelter, 1999; O'Brien, Dalton, Konsler, & Carlson, 1996). This study was designed to explore nurses' utilization of nonpharmacological interventions in pain management for hospitalized oncology patients. This chapter includes the limitations and conclusions from this study; discussion of the findings; implications for clinical practice, as well as, nursing administration; recommendations for future research; and concludes with a summary.

Limitations for this Study

1. Data collection tool has not been established for reliability.
2. Incomplete or missing documentation.
3. The researcher did not include data about one patient's length of stay and a different patient's age.
4. Study sample can not be generalized to the entire population.
5. Study sample size was small and not representative.

Conclusions for this Study

1. The majority of interventions were pharmacological.
2. The difference in pain score before and after a nonpharmacological intervention could not be addressed due to lack of documentation.
3. Nonpharmacological interventions utilized in order of most to least frequent were re-positioning, diversion, heat, activity, encouragement, and cold.

4. Same number of males (n=6) and females (n=6) received nonpharmacological interventions.
5. More pain episodes for females (n=83) than pain episodes for males (n=57) were documented.
6. There were differences in the types of nonpharmacological interventions between the males and females.
7. There were differences in the frequency of nonpharmacological interventions between the males and females.

Discussion

Some of the strengths and weakness of the study merit discussion. Performing a retrospective chart review has the advantage of obtaining data that should not have been biased or influenced by the researcher, study participants, or staff involved in the study. The action should or should not have occurred without manipulation by internal or external sources. If the facility or staff members knew that their charts would be reviewed for specific data items, they may be more likely to ensure that the data items are present in the charting. The data collected may have demonstrated the effectiveness of this method, based on the lack of documentation especially in the area of evaluation of the pain episode.

The lack of documentation in the area of evaluation of the pain episodes prevented the researcher from answering the second research question about the effectiveness of nonpharmacological interventions. In addition, to not having sufficient evaluation documentation after interventions, the majority (83.3%) of the pain episodes utilizing nonpharmacological interventions were combined with pharmacological interventions. If

an improvement existed, it would be difficult to attribute the cause to nonpharmacological interventions since pharmacological interventions were also used.

The researcher collected data on length of stay, tumor classification, type of cancer, and do not resuscitate (DNR) status. When analyzing these factors for those patients who received nonpharmacological interventions, the researcher did not note a pattern. There were a variety of data, which may be attributed to the small sample size. A larger sample size may provide enough data to make statistically significant comparisons. Classification of tumors based on grading was not available for every chart, and some cancers are not graded, but classified by cancer extension. These data items were collected because they may have shown a relationship between the use of nonpharmacological interventions and these data items. Certain types of cancer may have shown an increased or decreased use in nonpharmacological measures. For example, it is interesting to note that one female patient with cervical cancer utilized position changes, diversion, or activity, with pharmacological interventions during four pain episodes.

Comparisons can not be made with other studies since the researcher was unable to find a similar study questioning the frequency or use of nonpharmacological interventions in hospitalized oncology patients. In fact, the researcher did not find any studies examining the use or frequency of nonpharmacological interventions utilized in patients, in general, though the researcher did find studies on specific nonpharmacological interventions in specific patient populations. Besides being an exploratory study concerning the utilization of nonpharmacological interventions in general, this study may be considered a pilot study.

The researcher speculates that nonpharmacological interventions may have been utilized, but not documented. The nurse or other staff member may have distracted or

repositioned a patient without charting the action. In addition, the nurse or another staff member may have provided a simple back massage, and not charted the action. The researcher would need to conduct interviews with patients, nurses, or other staff members to determine if nonpharmacological measures had been done, but not charted.

This study did show that of the patients (n=12) receiving nonpharmacological interventions, females reported more pain episodes (n=83) than males (n=57). Yet in those patients (n=28) receiving pharmacological measures alone, men reported more pain episodes (n=102) than females (n=73). The researcher speculates that the difference in the reporting of pain episodes may have to do with the type or stage of cancer present, though the data does not support this. As previously mentioned, a variety of different types of cancer were present in this sample.

Implications for Clinical Practice

Data analysis showed that the majority of patient's (72%) rated their pain on admission greater than 7 from the 11 point numerical rating scale with 10 as the greatest pain level. The data also indicated that more than one-third of the patients rated their pain at 9 or greater. This information illustrates that the nurse may be confronted with the challenge of managing intense pain in the majority of oncology patients upon admission.

Knowing this information about the severity of pain, may encourage the nurse to provide quality pain management for hospitalized oncology patients by researching the causes of pain, and effective treatments. Previous studies demonstrate pharmacological and nonpharmacological measures can provide effective pain management. Nurses should be encouraged to incorporate nonpharmacological measures into their practice. Nurses may advance their practice by choosing to learn nonpharmacological interventions such as

bio-feedback or visualization. The nurse may provide simple massages, or distraction measures such as music, reading, or talking with the patient. The nurse should take credit for providing quality nursing care by documenting nonpharmacological measures utilized and the effectiveness of the measures.

The data analysis showed that the majority of interventions utilized for pain were pharmacological (94.4%), or included pharmacological measures with nonpharmacological measures (4.76%). Only 0.84% of interventions were nonpharmacological, though as previously stated nonpharmacological may have occurred, but were not documented. The results from this study demonstrate that nonpharmacological interventions are infrequently recorded. Research has shown that nonpharmacological measures have been useful in providing pain relief and should be considered by the nurse (Herr & Mobily, 1999). Quality, effective care has been the hallmark of nursing, and the continuation of this high standard requires that nurses apply effective pain management measures.

The nonpharmacological interventions utilized in this study did not require much time or advanced education and training. Nurses may realize that they can provide effective relief measures in pain management that only require a few minutes, such as repositioning, and applying heat or cold. These measures may be done in conjunction with other interventions. For example, the nurse may enter the room to inform the patient of a new procedure or test ordered, note patient discomfort concerning their low back pain, and provide massage to the lower back while explaining the procedure or test.

Implications for Nursing Administration

Pain has been described as a major public health concern ("Pain in America", n.d.) and remains a focus for patients, regulatory organizations, healthcare professionals, and

specific organizations working with patients experiencing pain. Nurse administrators are responsible for monitoring and providing quality patient care, which includes effective pain management. In addition, nurse administrators are responsible for ensuring that staff members and the facility meet regulatory standards and requirements.

Nursing administrators may use the information gathered from this study to promote complete and thorough pain management documentation, especially in the area of evaluation. Nursing administration may also encourage staff to document the use of all nonpharmacological interventions. As previously noted, staff should be encouraged to take credit for their work and the interventions that they have implemented. Staff nurses are not paid by the amount or type of interventions utilized for each patient, though historically these interventions demonstrate the valuable care nurses provide for patients. Thorough documentation of the multitude of interventions provided by nurses assists with indicating the value of nursing and the importance nursing performs in the care of patients.

Recommendations for Nursing Research

The results of this study support the need for additional research.

1. Replication of this study is suggested utilizing several different hospital settings.
2. Replication of this study is suggested using a larger sample to determine statistical significance in the effectiveness of nonpharmacological interventions.
3. Replication of this study in one facility is suggested with the further actions of providing educational programs on the benefits of nonpharmacological interventions in pain management to staff members, and repetition of the study after the educational offering.
4. Replication of this study in one facility is suggested with a secondary study in the same facility that interviews the patients and staff nurses about the use and effectiveness of

nonpharmacological interventions in pain management.

5. Future studies may be conducted that explore the knowledge level of staff nurses concerning nonpharmacological interventions in pain management.
6. Future studies may be conducted that interview staff nurses about their utilization of nonpharmacological interventions in pain management.
7. Future studies may be conducted that explore the knowledge level of patients concerning nonpharmacological interventions in pain management.
8. Future studies may be conducted in other chronic pain conditions comparing utilization of nonpharmacological interventions in differing chronic pain conditions.

Summary

This study has shown that the majority of pain management interventions for the hospitalized oncology patients were pharmacological and that nonpharmacological interventions have either been infrequently utilized in the pain management of the hospitalized oncology patients, or not documented. Four of the nonpharmacological interventions utilized may be categorized as cutaneous focused while two of the nonpharmacological interventions may be categorized as behavioral focused. In this study there was no documentation of nonpharmacological interventions requiring further training such as visualization or biofeedback. This study did show that of the patients receiving nonpharmacological interventions, females verbalized more pain episodes than males, which may be more socially acceptable for females to complain of pain than males. In addition, males may believe that expressing pain is a symbol of weakness. Further investigation is needed related to the use and effectiveness of nonpharmacological interventions in hospitalized oncology patients.

APPENDIX A
IRB APPROVAL LETTER

October 2, 2003

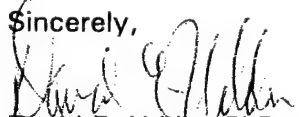
Vickie Skupski, RN, BSN
PO Box 961
Dayton OH 45324-0961

Dear Ms. Skupski:

Your protocol 03-0095, "Exploration of "Nurses' Use of Nonpharmacological Interventions for Pain Management of Hospitalized Oncology Patients"" is approved by the expedited method of the Institutional Review Board (IRB) of Miami Valley Hospital. The approval is good through **10/01/2004**. The approval implies the following:

1. The MVH IRB reviewed this protocol on 10/02/2003 by the expedited method and waived the requirement for authorization or consent based on the determination that disclosure of the information is of minimal risk to individuals because of an adequate data plan, the research could not practicably be conducted without the waiver and the research could not be conducted without access and use of the protected health information.
2. That this approval is for one year and if it extends beyond this period a request for an extension is required.
3. That a progress report must be submitted before an extension of the approved one-year period can be granted.
4. That any change in the protocol must be approved by the IRB; otherwise approval is terminated

Sincerely,



David E. Uddin, PhD, CIP
Vice Chair, Institutional Review Board

APPENDIX B
CHART REVIEW FORM

CHART REVIEW FORM

1. Year: _____ Day 1 _____ Day 2 _____ Day 3 _____

Demographics:

2. Age _____

3. Gender: Male _____ Female _____

4. Race: A _____ B _____ H _____ I _____ M _____ O _____ U _____ C _____

5. Length of Stay: _____

6. Pain Rating on Admission _____ [numerical rating scale (NRS)]

7. DNR Status: Full Code _____ DNR comfort care (DNRCC) _____
DNR comfort care arrest (DNRCC-Arrest) _____

8. Cancer Type & Stage: Breast _____ Stage I _____
Colon _____ Stage II _____
Lung _____ Stage III _____
Prostate _____ Stage IV _____
Other _____

Episode:

9. Time: _____

10. Pain Score: _____ 0=No Pain 1=Mild Pain 5=Moderate Pain 10=Severe Pain N=Nonverbal
Non-verbals: _____ Cr=Crying S=Sweating G=Grimacing R/A=Restless/Agitation
C=Calm SL=Sleeping R=Resting NC=New onset confusion O=Other

11. Location: _____

12. Characteristics: _____ T=Throbbing S=Sharp C=Cramping D=Dull B=Burning
A=Aching P=Pressure R=Radiates 0=Other

13. Pain Frequency: _____ B=Brief I=Intermittent C=Constant

14. Medication: _____ Dose: _____ Route: _____

15. Sedation Score: _____ 1=Wide awake 2=Drowsy 3=Sleeping, easily aroused 4=Difficult
to arouse/weak 5=Unarousable/paralyzed

16. Relief Measure: _____ M=Medicate P=Positioned H=Heat C=Cold Ma=Massage
A/E=Activity/Exercise D=Diversion T=TENS O=Other

17. Time: _____

18. Pain Score: _____

19. Sedation score: _____

20. Plan: _____ R=Resting M=Monitor Re=Re-medicate N=Notify Dr. O=Other
E=Effective 0=No interventions

Episode:

9. Time: _____

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Additional Comments:

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